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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/031,856	11/08/2002	Garry E. Jacobs	325,144-US	8550
24392	7590	02/11/2005	EXAMINER	
RUTAN & TUCKER, LLP. ROBERT D. FISH P.O. BOX 1950 COSTA MESA, CA 92628-1950			BUSHEY, CHARLES S	
			ART UNIT	PAPER NUMBER
			1724	

DATE MAILED: 02/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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**Office Action Summary**

Application No.

10/031,856

Applicant(s)

JACOBS ET AL

Examiner

Scott Bushey

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
 Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM  
 THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 December 2004.  
 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
 6) ☒ Claim(s) 1-20 is/are rejected.  
 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☐ All b) ☐ Some \* c) ☐ None of:  
 1. ☐ Certified copies of the priority documents have been received.  
 2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_  
 4) ☐ Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_  
 5) ☐ Notice of Informal Patent Application (PTO-152)  
 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 5-8, and 12 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Madsen (Fig. 3).

Applicant should note that element (15) in Fig. 3 of the reference clearly anticipates applicant's divider as broadly recited by the instant claims. Also, with respect to the recitation of the intended use, i.e., the liquid fluid and gaseous fluid flowing co-currently upwardly in the space between the riser and the cap, as recited by instant claim 1 of the claimed invention, such must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 2-4, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Madsen.

Madsen as applied above substantially discloses applicant's invention as recited by instant claims 2-4, 9, and 10, except for the specific recitation that the divider has a length of 70% to 100% of the distance between the top of the riser and bottom of the cap, and that the cap has three to six dividers. Madsen does clearly teach a plurality of dividers (15) having a length in excess of 50% of the distance between the top of the riser and bottom of the cap. Wherein such a divider length would clearly affect the flow through the space by segmenting the flow along a majority of the length of the space, thereby reducing turbulence within the space, it would have been obvious to an artisan at the time of the invention, to modify the length of the dividers and the number thereof, as taught by Madsen, to provide the desired level of flow control within the space, such modifications being dictated by the vapor/liquid ratio and the flow volume through the device per unit time.

6. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Madsen as applied to claim 1 above, and further in view of Jacobs et al '965.

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Madsen as applied above substantially discloses applicant's invention as recited by instant claim 11, except for the swirl director attached to the riser.

Jacobs et al '965 (Figs. 16-19; col. 21, lines 22-61, 66, 67 ; col. 22, lines 1-8) disclose swirl director means (460) attached to the riser of a bubble cap. Wherein the dividers of Madsen provide a more uniform flow within the space between the riser and the cap, it would have been obvious to an artisan at the time of the invention, to modify the bubble cap of Madsen to include swirl directors, in view of Jacobs et al '965, since such would further enhance the uniformity of flow within the bubble cap, as taught by Jacobs et al '965 (note col. 21, lines 57-59).

7. Claims 1-10, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Madsen taken in view of Ballard et al.

Madsen as applied above against instant claims 1-10, and 12 is considered to anticipate or render obvious the inventions as defined by the claims as amended by applicant by the amendment filed May 11, 2004. Specifically, as stated above, the intended use of a known apparatus or the materials worked on by a known apparatus are not considered to lend patentable weight to the apparatus. Further, recitation of a mixture of a liquid and a gas disposed within a portion of the apparatus is not considered to constitute an apparatus element, as alleged by applicant.

In any event, Ballard et al (Figs. 1, 2, 5-7, 13; col. 1, lines 39-44; col. 3, lines 69-71; col. 5, lines 44-46, 48-49, 53-62; col. 8, lines 43-47, 52-57, 63-65; col. 9, lines 9-13; col. 10, lines 17-28) teaches a bubble cap system including a divider structure (318), wherein co-current upflow of the phases exists within the space between the riser and the cap of the bubble cap structure. In view of the teaching by Ballard et al that a bubble cap of the type as taught by Madsen may be

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used in a co-current downflow column, it would have been obvious to an artisan at the time of the invention, to use the bubble cap as taught by Madsen within such a downflow column, such that flow within the space between the riser and cap of the bubble cap were co-current upflow, if it were desired to utilize the bubble cap structure as a means for distribution within a column.

8. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over the reference combination as applied to claim 11 in paragraph 6 above, and further in view of Ballard et al.

For the same reasons as set forth in paragraph 7 above, it would have been obvious to an artisan at the time of the invention, to operate the apparatus as taught by the primary reference combination, in a co-current downflow column, such that flow within the space between the riser and cap of the bubble cap were co-current upflow, if it were desired to utilize the bubble cap structure as a means for distribution within a column.

9. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Madsen as applied to claim 1 in paragraph 2 above, and further in view of either Ballard et al or the articles by William L. Bolles as admitted by applicant as prior art at page 2, paragraph 1 within the instant specification.

Madsen as applied in paragraph 2 above substantially discloses applicant's invention as recited by instant claim 13, except for the bottom of the cap being at least 1.5 inches from the tray.

Ballard et al and the articles by William L. Bolles, as admitted by applicant, each alternatively teach that it is well known within the art to place the bottom of the cap of a bubble cap at 1.5 inches above the tray surface. It would have been obvious to an artisan at the time of the invention, to modify the placement of the bottom of the cap of Madsen to at least 1.5 inches

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above the tray surface, in view of either of the alternative secondary reference teachings, since as clearly understood in the art, such placement is dictated by the liquid depth on the tray and thus the volumetric flow rate of the liquid within the column. It is further noted that, as stated above, Ballard et al teaches co-current upflow of the phases within the space between the riser and the cap of the bubble cap structure.

10. Claims 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ballard et al taken in view of Madsen.

Ballard et al (Figs. 1, 2, 5-7, 13; col. 1, lines 39-44; col. 3, lines 69-71; col. 5, lines 44-46, 48-49, 53-62; col. 8, lines 43-47, 52-57, 63-65; col. 9, lines 9-13; col. 10, lines 17-28) substantially disclose applicant's invention as recited by instant claims 14-20, except for the specific recitation that the divider disposed in the space between the riser and the cap has a length of at least 50% of the distance between the top of the riser and the bottom of the cap, and that the slot length may be at least 5 inches, as recited by instant claim 20. Ballard et al does disclose a divider structure (318) between the riser and the cap, and that the slot length within the cap may be about  $\frac{1}{2}$  of the length of the cap itself, and that the cap may have a vertical dimension of roughly about 9 inches. Wherein half of roughly 9 inches, is about  $4\frac{1}{2}$  inches, which approximates the slot length of 5 inches as recited by instant claim 20, absent an unexpected showing of criticality it would have been obvious to an artisan at the time of the invention, to modify the slot length of the Ballard et al apparatus from about  $4\frac{1}{2}$  inches, as specifically taught by the reference, to 5 inches as recited by instant claim 20, such slot length being dictated by the liquid depth on the tray, as clearly discussed by Ballard et al.

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Madsen clearly teaches a plurality of dividers (15) having a length in excess of 50% of the distance between the top of the riser and bottom of the cap. It would have been obvious to an artisan at the time of the invention, to modify the length of the divider of Ballard et al to be at least 50% of the distance between the top of the riser and bottom of the cap, in view of Madsen, since such would provide a convenient means for affecting the flow through the space by segmenting the flow along a majority of the length of the space, thereby reducing turbulence within the space.

### ***Response to Arguments***

11. Applicant's arguments filed December 21, 2004 have been fully considered but they are not persuasive.

With respect to the argument against the rejection of claims 1, 5-8, and 12 under 35 USC 102(b) as anticipated by Madsen, applicant has stated that the Examiner must reference the specific teaching by Madsen of the fluid mixture moving upward within the space. However, claims 1, 5-8, and 12, as currently recited, are directed to a bubble cap apparatus, which in accordance with the prevalent case law, the apparatus claims for which applicant desires a patent must define a structural difference between the claimed invention and the prior art. Here, as in any statutorily recited apparatus claim, the material worked on by the claimed apparatus cannot lend patentable weight to the apparatus. As stated by the case law as cited in the rejection statement above, if the prior art structure is capable of performing the intended use, then it meets the claim. Clearly the bubble cap structure, as disclosed by Madsen is identical to that as claimed by instant claims 1, 5-8, and 12, and therefore the prior art structure must be considered capable of performing the intended use, as recited by applicant's claims.



With respect to each of the obviousness rejections applied to the pending claims, which utilize Madsen as either a base reference or a teaching reference for suggesting a given structural modification, applicant's insistence that Madsen cannot be used as suggested by the Examiner is not found to be persuasive. Specifically, it is applicant's position that Madsen teaches against co-current transport of a fluid mixture in an upward motion within the space between the riser and cap. While the Examiner concedes that Madsen suggests using his bubble cap within a broader apparatus that passes fluid through the space in a downward motion, there is nothing within the structure of the Madsen bubble cap that would prevent or preclude fluid movement through the space in the manner as desired by applicant. Furthermore, utilization of bubble caps for passage there through by fluids in the manner as suggested by Madsen, or in the manner as suggested by either Jacobs et al '965 or Ballard et al, which each suggest passage of fluid mixtures through a bubble cap in the manner as recited by applicant's instant claims, is notoriously well known within the art of gas/liquid contact. Applicant's argument that utilizing Madsen in the manner as claimed by applicant would result in a work area being sprayed with an air/water mixture it also not found to be persuasive. Specifically, applicant's claims are limited to the bubble cap structure, and as such the prior art is assessed in a manner commensurate with the scope of applicant's claims, i.e., the bubble cap structure, as claimed by applicant is compared to the bubble cap structure as disclosed by the prior art references. In other words, so long as applicant's claims are recited broadly as a bubble cap structure, without any further defining upstream or downstream structures, which would be affected by the operation within the bubble cap, it is irrelevant to the issues at hand, what additional structures are taught by the prior art references beyond the specific bubble caps taught thereby.

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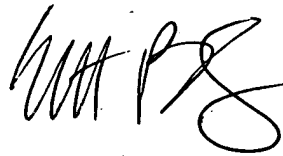
***Conclusion***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott Bushey whose telephone number is (571) 272-1153. The examiner can normally be reached on Monday-Thursday 6:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on (571) 272-1166. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Scott Bushey  
Primary Examiner  
Art Unit 1724

  
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csb  
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